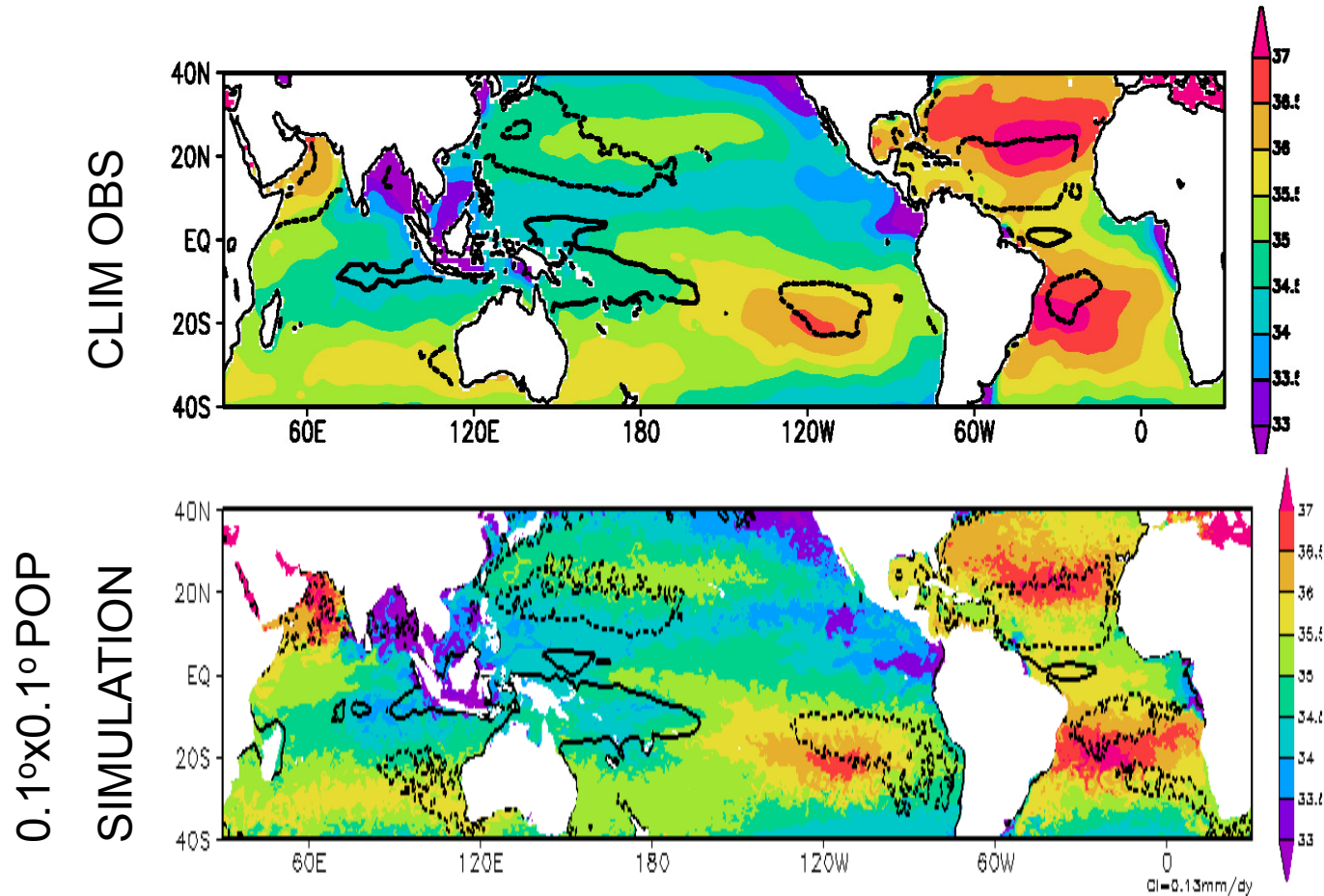


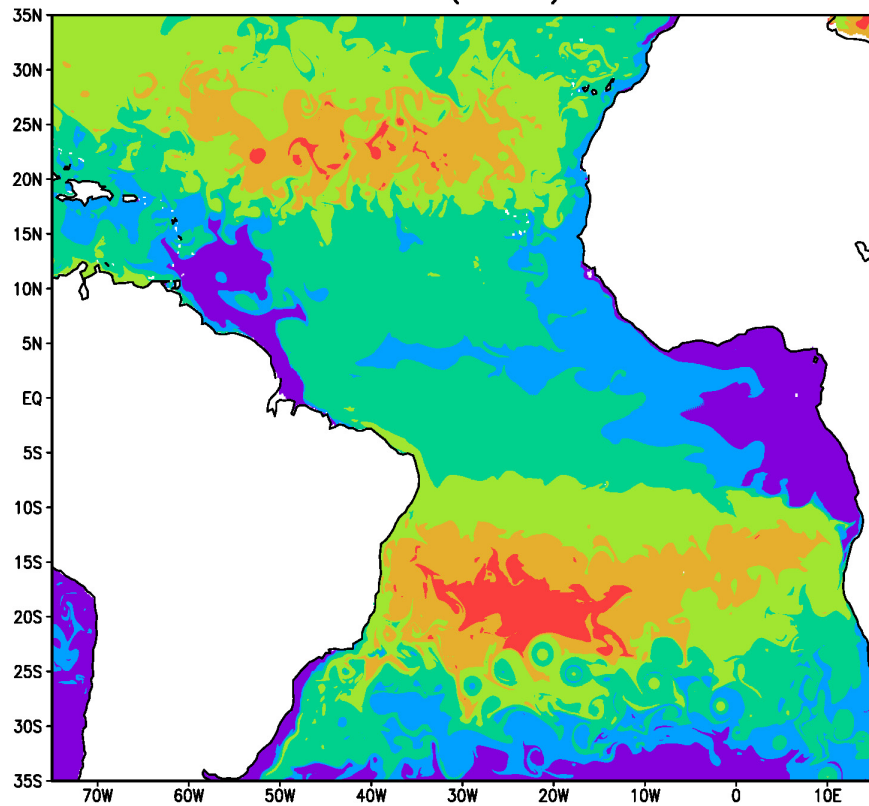
Global Eddy-Resolving Ocean Models

Jim Carton (UMD) & Frank Bryan (NCAR)

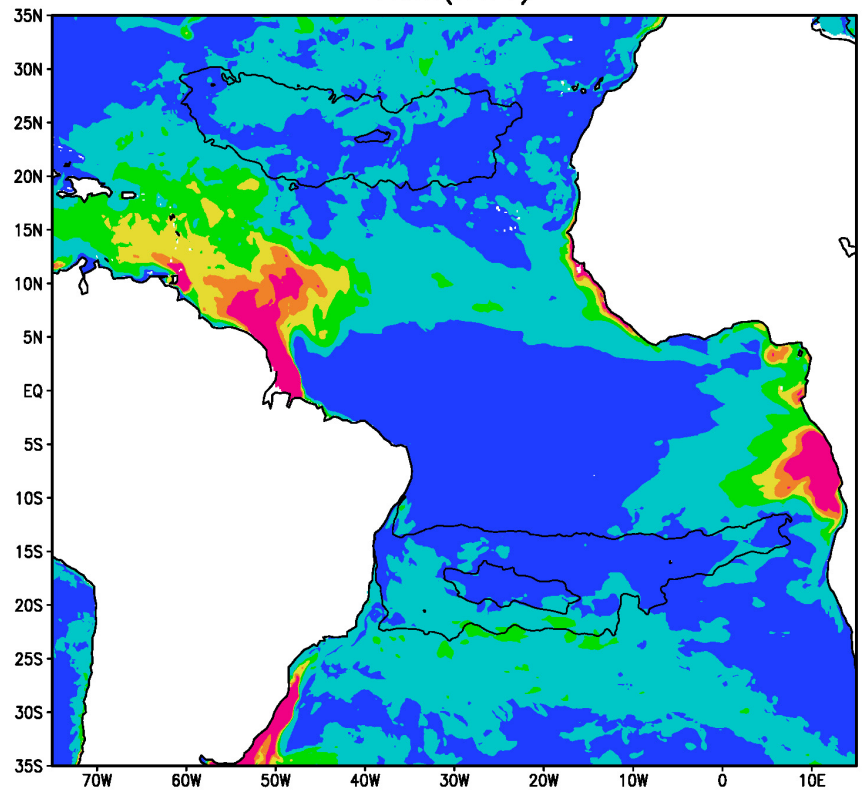


'standard year' forcing

5-dy 'snapshot'
SSS (6APR)



Annual Statistics
rms(SSS)



100m Salt budget

What is the eddy contribution to the salt budget in the subtropical North Atlantic?

How different is the balance in different subtropical oceans?

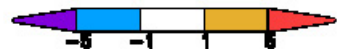
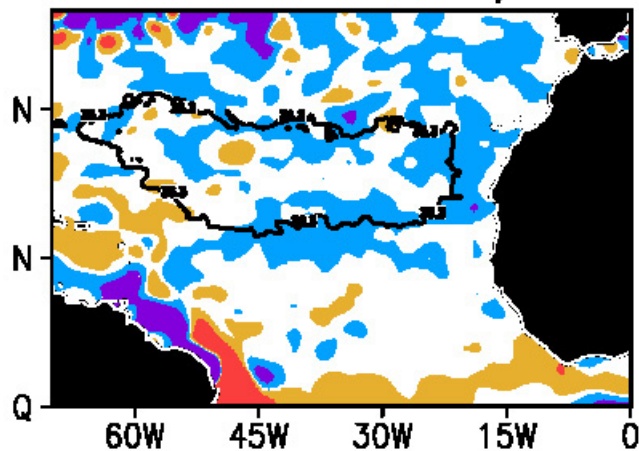
Horizontal

$$\langle \vec{U} \rangle \cdot \nabla_h \langle S \rangle$$

HOR

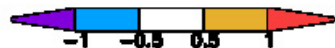
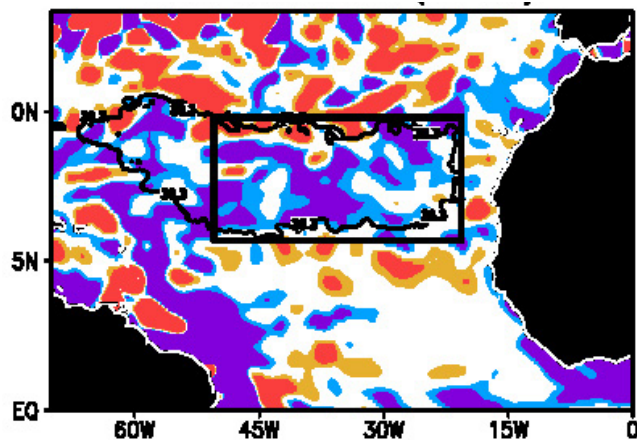
JUN)

Mean



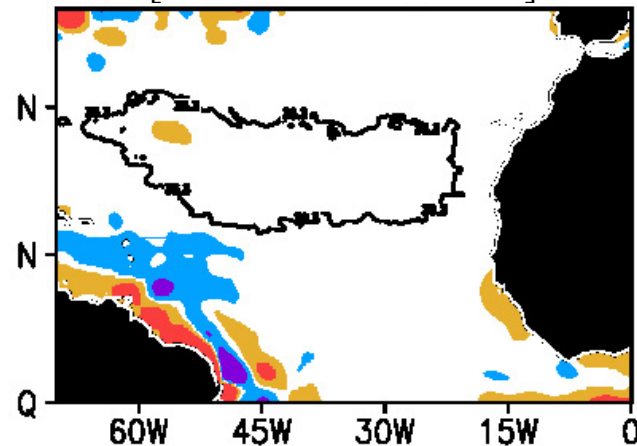
$$\langle \vec{U} \cdot \nabla_h S \rangle - \langle \vec{U} \rangle \cdot \nabla_h \langle S \rangle$$

Eddy

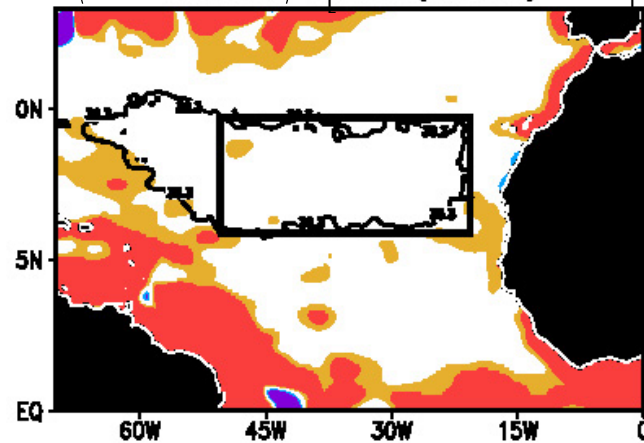


Vertical + Stor.

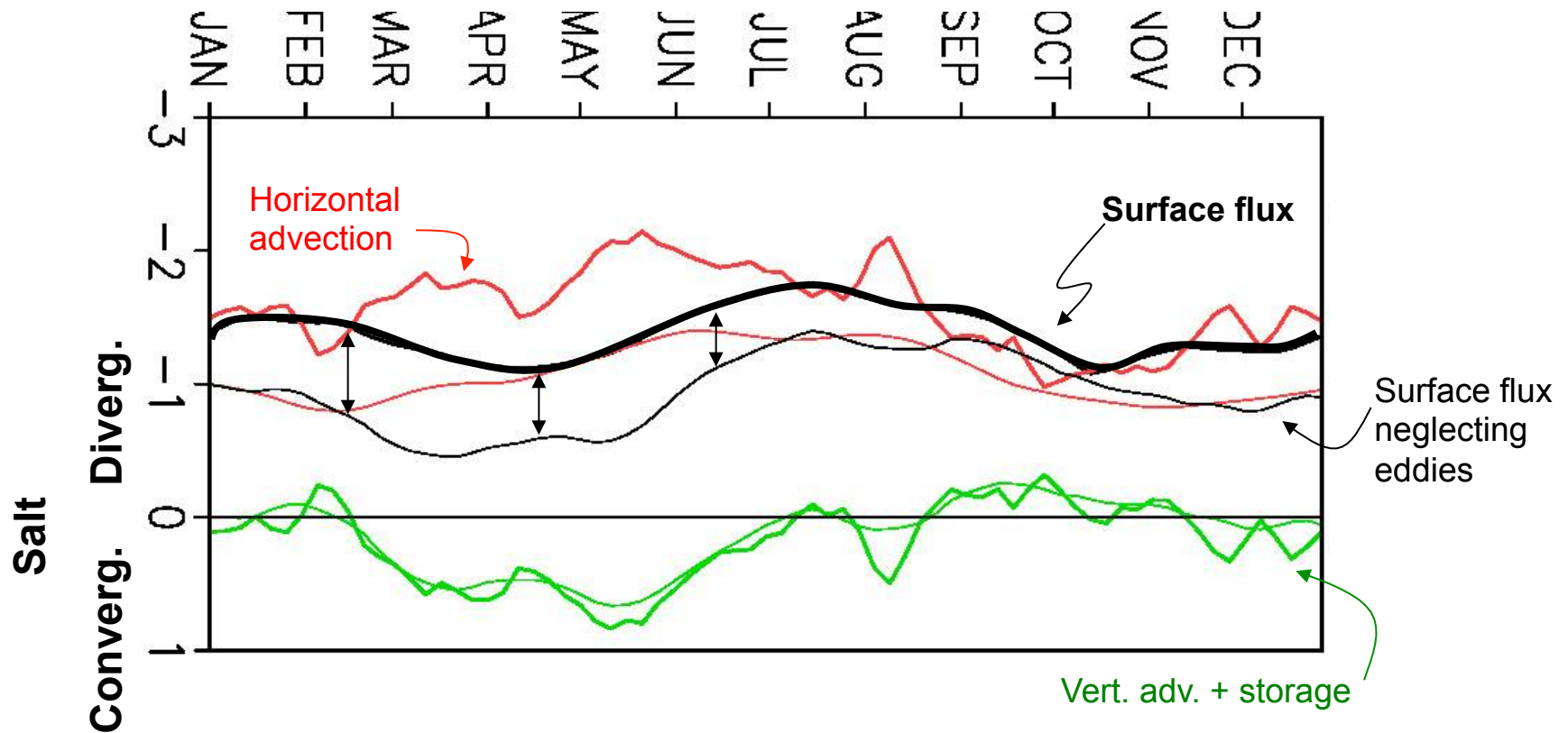
$$\left[\frac{\partial \langle S \rangle}{\partial t} + \langle w \rangle \frac{\partial \langle S \rangle}{\partial z} + \langle diff \rangle \right]$$

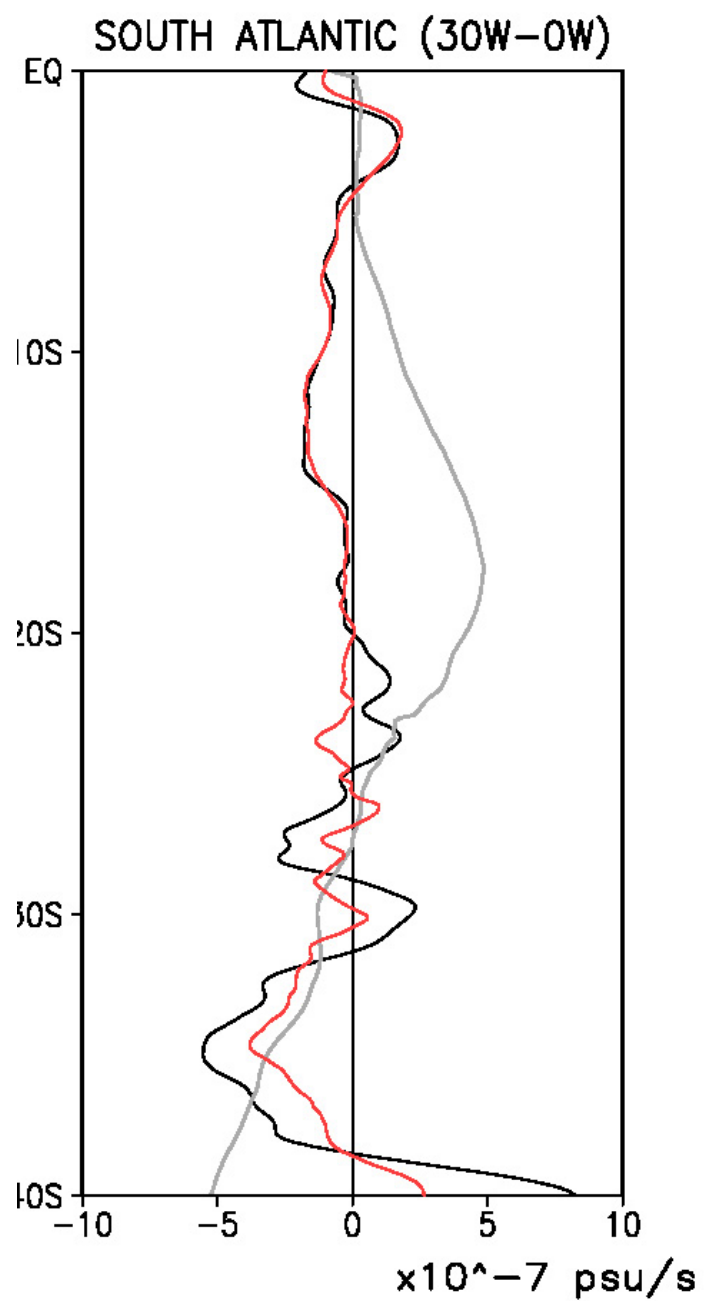
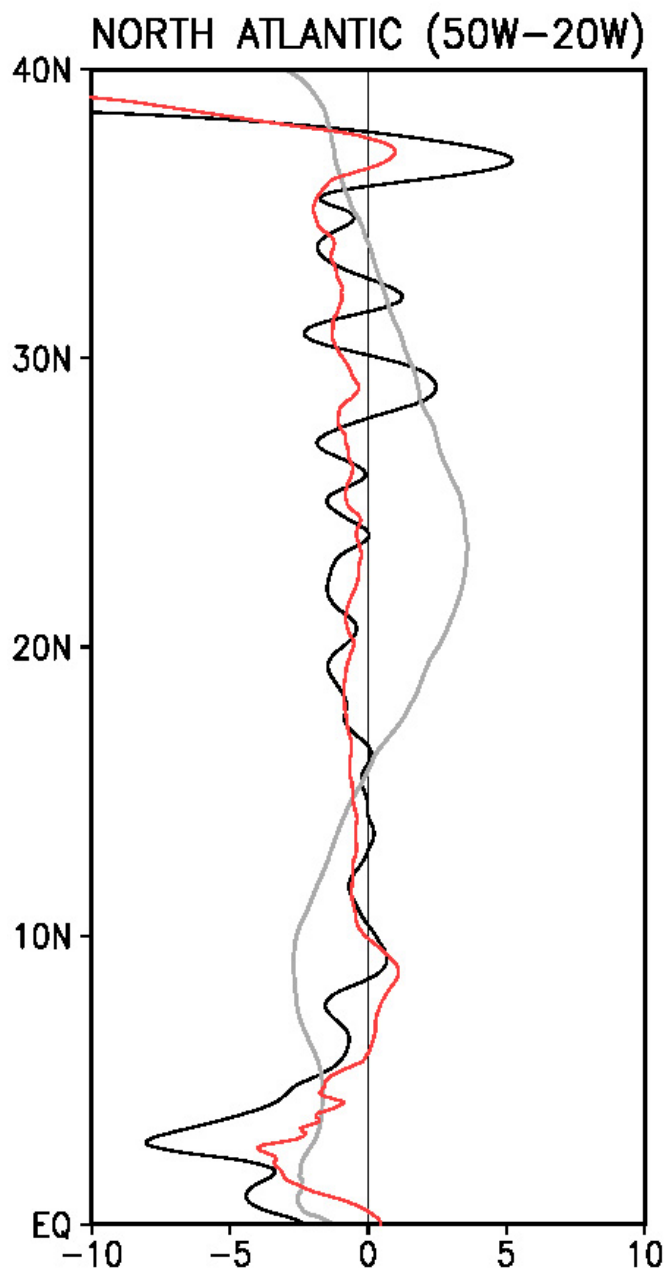


$$\left\langle \frac{\partial S}{\partial t} + w \frac{\partial S}{\partial z} + diff \right\rangle - \left[\frac{\partial \langle S \rangle}{\partial t} + \langle w \rangle \frac{\partial \langle S \rangle}{\partial z} + \langle diff \rangle \right]$$

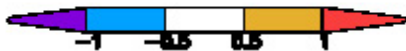
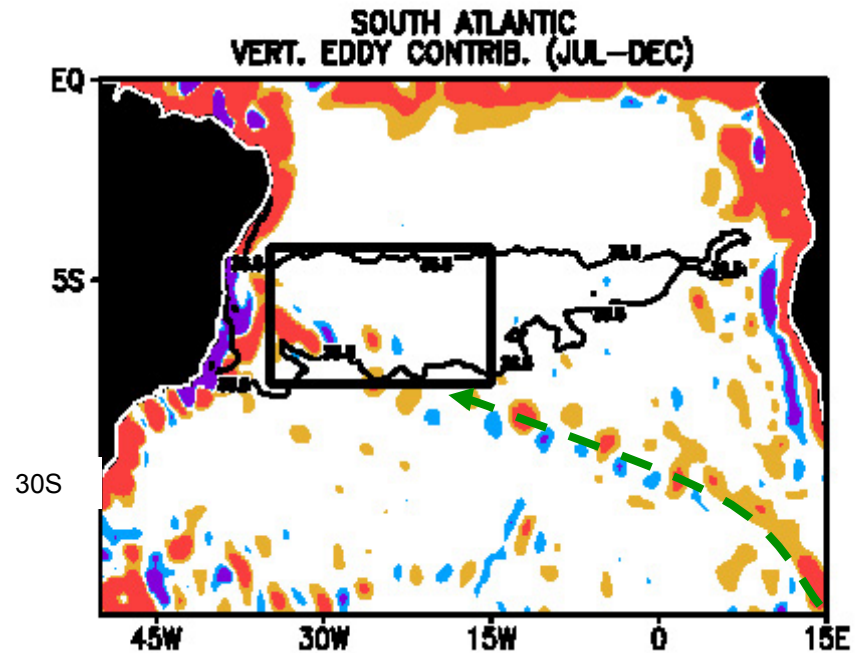
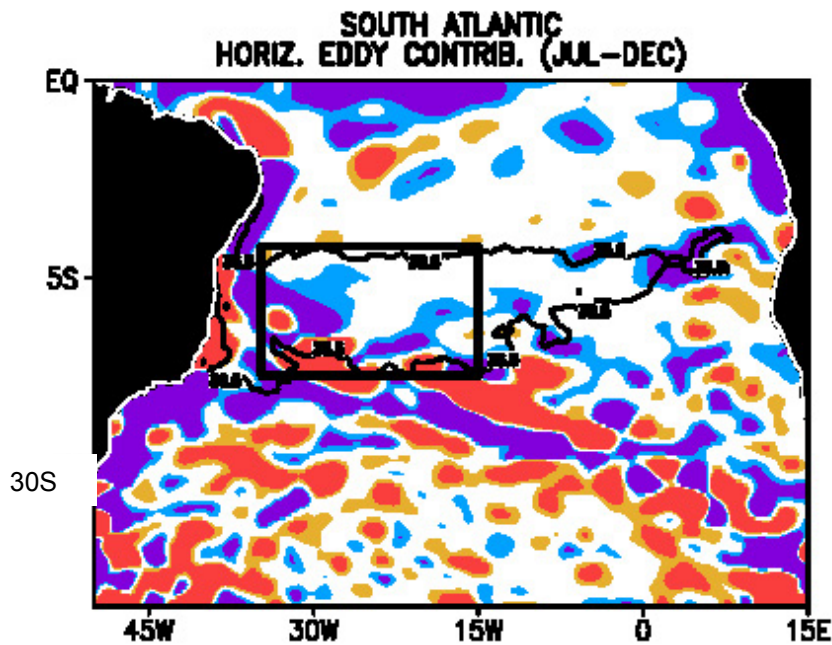


Box-averaged model salt balance in the North Atlantic

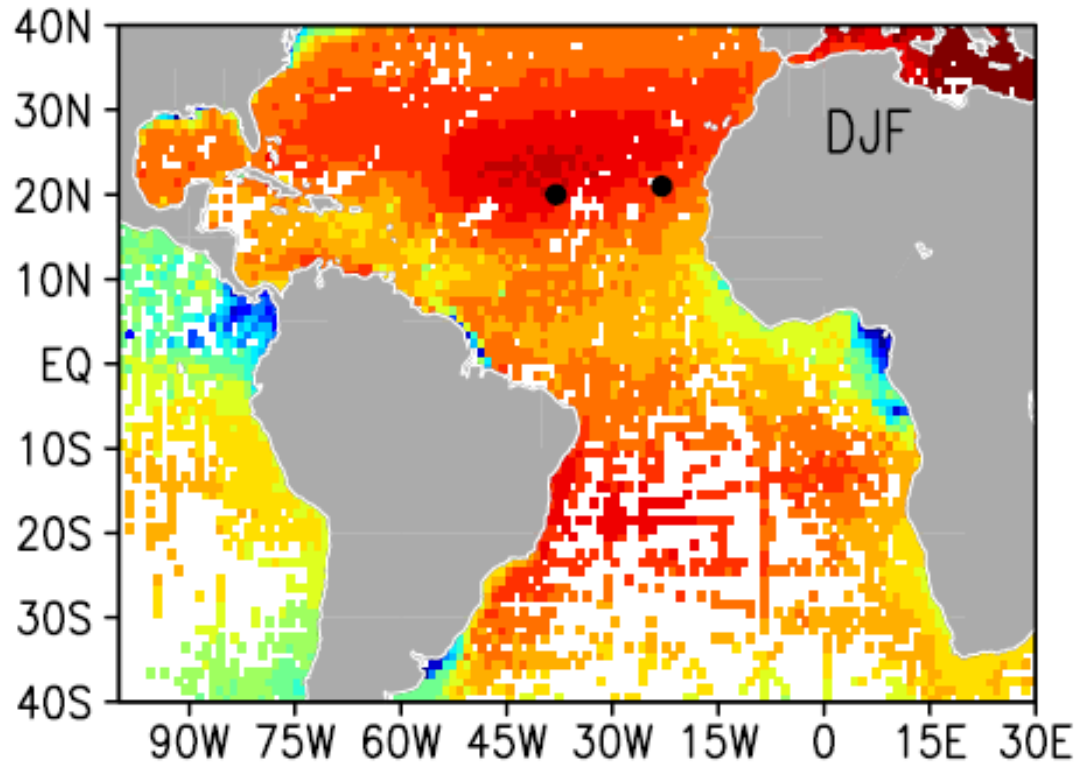




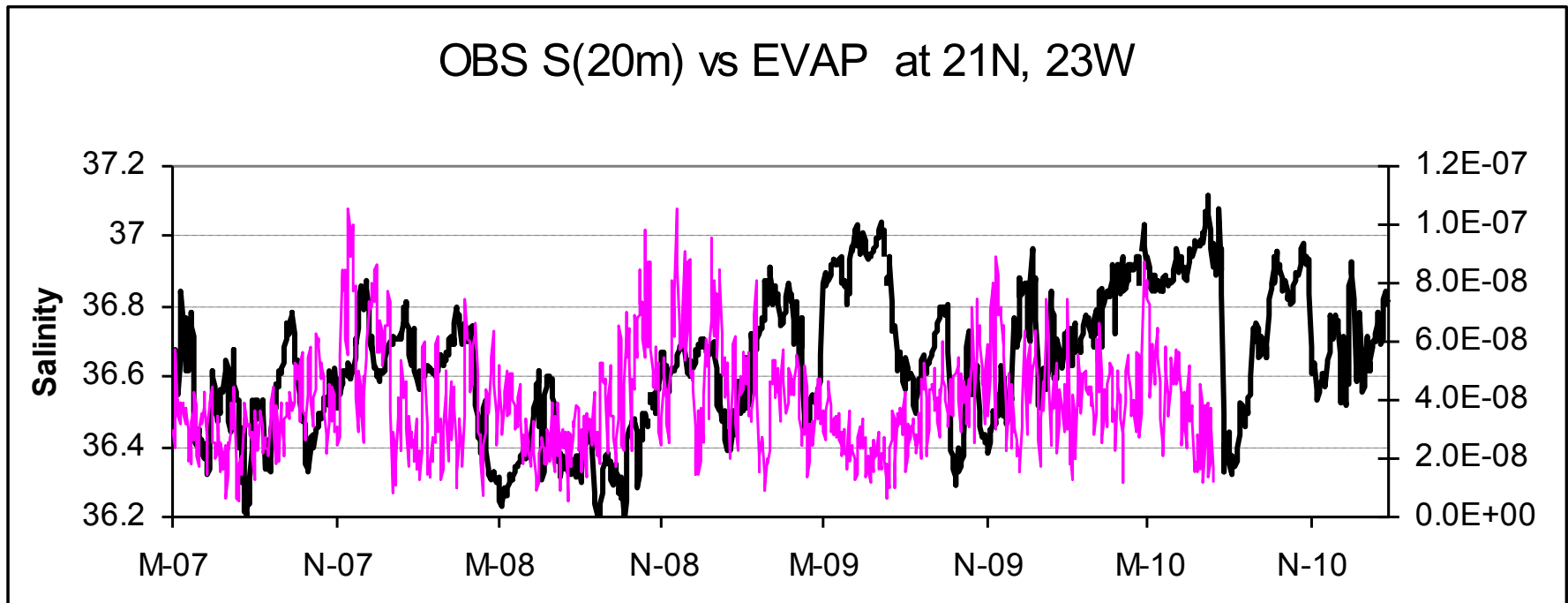
For Comparison: advection by eddies in the South Atlantic



Comparison at PIRATA MOORINGS

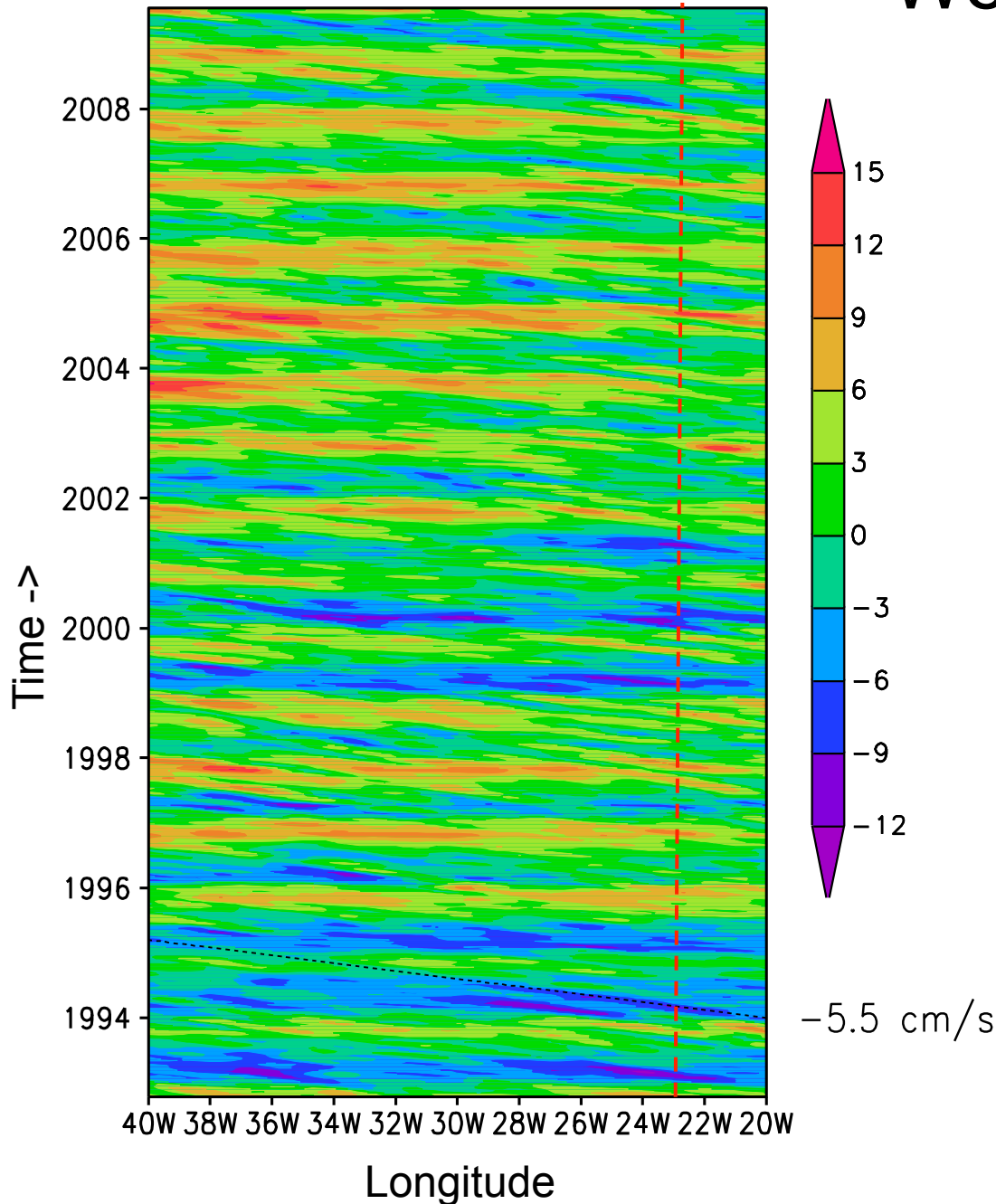


Time series at the eastern PIRATA mooring



Weekly SSH (cm) averaged 20N–21N

Westward Propagation along 20-21°N

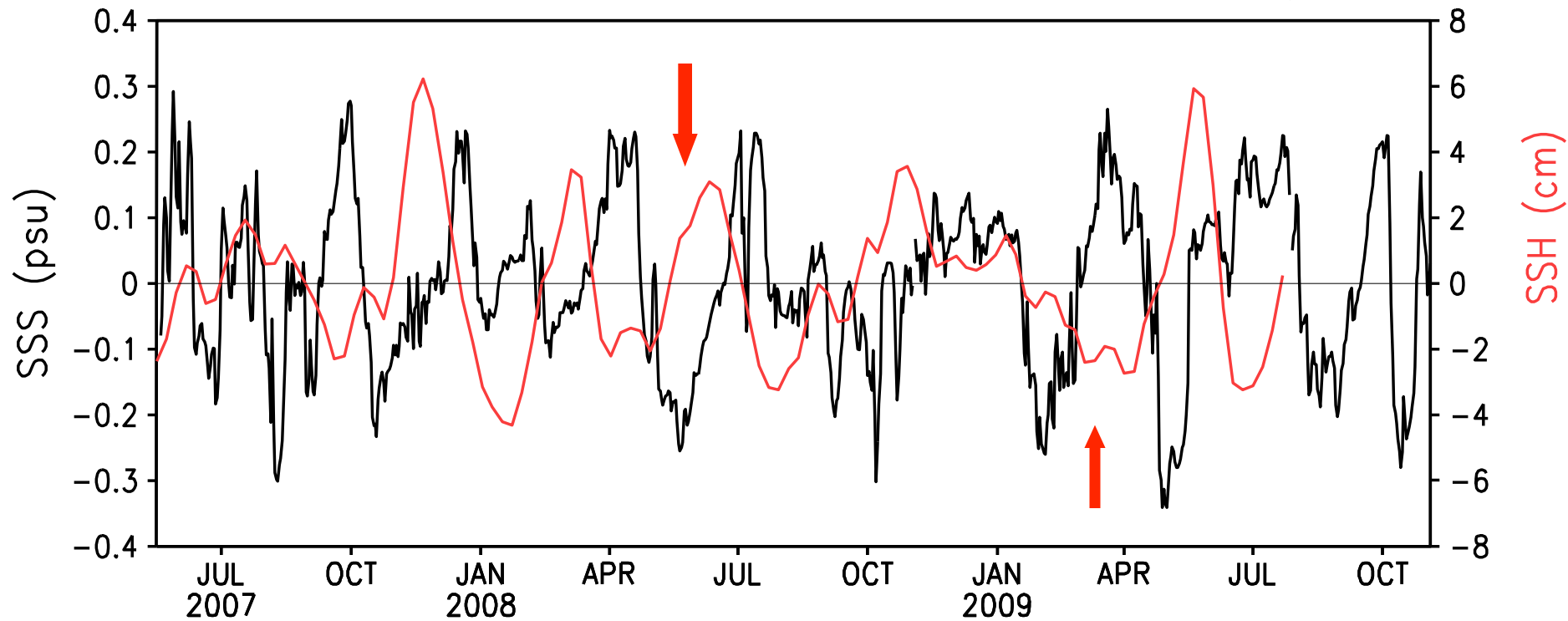


Westward propagating
Rossby Waves with
amplitude of ~3cm are
present.

$S_{(z=20m)}$ vs SSH

(<6mo high-pass filtered)

21°N, 23°W



How does mesoscale SSS variability contribute to the maintenance of the seasonal and mean 'Salty Pool' and its contribution to the shallow overturning cell?